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| 10/532,647 | 12/05/2005 | Truls Arnegaard | 14.0209-PCT-US | 5788 |

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| EXAMINER | |
|---|---|
| HUGHES, SCOTT A | |
| ART UNIT | PAPER NUMBER |
| 3663 | |

| NOTIFICATION DATE | DELIVERY MODE |
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| 04/24/2009 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/532,647 | ARNEGAARD ET AL. | |
| | Examiner | Art Unit | |
| | SCOTT A. HUGHES | 3663 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *20 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-10,12,13 and 15-27* is/are pending in the application.

4a) Of the above claim(s) *9 and 18-25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8,10,12,13,15-17,26 and 27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments filed 2/11/2009 have been fully considered but they are not persuasive.

Applicant's arguments with respect to the amendments to claim 1 are moot in view of the new grounds of rejection presented below.

Applicant argues that Arescon does not teach the amended limitation in claim 1 of automatically reconfiguring the network upon removal of a router, data source node, or seismic data source. As noted by applicant, this amended limitation in claim 1 was previously part of claim 13 that stated "for automatically reconfiguring the network upon removal of any one of the router, the data source nodes, or the seismic data sources, or upon the addition of an additional piece of seismic equipment." As Arescon taught auto reconfiguration upon the addition of an additional piece of seismic equipment at Pages 9-10, previous claim 13 was rejected over Arescon. Applicant's amendment to claim 1 to include only the feature of automatic reconfiguration upon removal and the arguments that Arescon does not teach this new limitation in claim 1 are moot as this auto configuration capability upon removal of network items is known in the art of networks using open protocols.

Fukui (US6131119) teaches automatic reconfiguration of a network upon removal of a router or other network component. It would have been obvious to modify Arescon to include automatic reconfiguration upon removal of a router or network component as taught by Fukui in order to maintain a database of the configuration of

the network and to preserve existing connections in the network to allow data and communications to continue to be sent along the network.

Applicant's arguments with respect to new claims 26 and 27 are moot in view of the rejections presented below based on Arescon and Johnson.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2, 4, 6, 10, 12-13, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arescon (Embedded Linux in a Soft Real-Time Task: The Canadian Geological Survey Internet Seismometer) in view of Szyszko (US20020071430) and Fukui (6131119).

With regard to claim 1, Arescon discloses a seismic acquisition system (Geological Survey of Canada) (Pages 5-7), comprising: a plurality of seismic data sources for generating seismic data (seismometers); at least one data collection system (storage, data servers) utilizing an open network protocol (Internet Protocols) (Pages 5-10) (Figs. 1, 3); and at least one line network connecting the seismic data sources to the data collection system via the open network protocol (Figs. 1, 3) (Page 5, Section 3 to Page 9), the line network including: a plurality of data source nodes at which a portion of the plurality of seismic data sources (seismometers, accelerometers) is attached to the

line network (Figs. 1, 3) (Page 5, Section 3 to Page 9); and a router for routing data generated by the seismic data sources to the data collection system through the data source nodes in accordance with the open network protocol (Fig. 1) (Pages 7-9). Arescon discloses a synchronization service for synchronizing a plurality of clocks for the data collection system, the data source nodes, and the seismic data sources (Page 9). Arescon does not specifically disclose that the routers are also synchronized over the internet by the NTP. Szyszko teaches that NTP synchronizes routers in a network ([0017-0019]). It would be obvious to modify Arescon to include the network routers in the devices that are synchronized using the NTP in order to have all routers in the system using the same key for encrypting the data sent. Arescon discloses an auto configuration capability for automatically reconfiguring the line network upon addition of equipment (Pages 9-10), but does not specifically disclose automatically reconfiguring upon removal of any one of the router, the data source nodes, or the seismic data sources. Fukui teaches that it is known in networks using open protocols to include an automatic reconfiguration capability upon removal of routers or other network components (Column 8, Line 49 to Column 9, Line 5). It would have been obvious to modify Arescon to include automatically reconfiguring the network upon removal of a router or other element of the network as taught by Fukui in order to maintain the configuration database of the equipment and communication between equipment without need to intensive manual labor whenever a component is removed or replaced.

With regard to claim 2, Arescon discloses that the router routes data to the seismic data sources (Page 5, Section 3 to Page 9).

With regard to claim 4, Arescon discloses at least one additional router for routing data generated by the seismic data sources to the data collection system through the data source nodes in accordance with the open network protocol (Pages 5-6, 9).

With regard to claim 6, Arescon discloses that the line network comprises a land based seismic cable (Pages 2-6).

With regard to claim 10, Arescon discloses that the open network protocol includes the Internet Protocol (Pages 5-6, 9).

With regard to claim 12, Arescon discloses that the synchronization service comprises the Network Time Protocol (Page 9).

With regard to claim 13, Arescon discloses an auto-configuration capability for automatically reconfiguring the network upon the addition of an additional piece of seismic equipment (Pages 9-10). Arescon does not specifically disclose a location mapping service for generating a mapping between network addresses of the data collection system, the router, the data source nodes, and the seismic data sources and physical locations of the data collection system, the router, the data source nodes, and the seismic data sources. Arescon discloses giving a network address to the components of the system, but does not specifically disclose a mapping service to map the network addresses to the physical locations of the system. Fukui teaches a mapping service that maps network addresses to physical locations (abstract; Column 2, Lines 30-40). It would have been obvious to modify Arescon to include a mapping service to map the network addresses to physical locations as taught by Fukui in order

to be able to create a physical network topography of the equipment in the system so that the network configuration and topology of the devices can be displayed to check that the system is configured properly.

With regard to claim 15, Arescon discloses that the synchronization service tolerates changes in topology (is maintained by NTP and several remote timeservers) (Page 9).

With regard to claim 16, Arescon discloses that the synchronization service synchronizes clock hierarchically (Page 9).

With regard to claim 17, Arescon discloses that the service tolerates breaks (Pages 9-10).

Claims 3, 5 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arescon in view of Szyszko and Fukui as applied to claim 1 above, and further in view of Johnson (Eos. Trans. AGU Fall Meeting, 2001).

With regard to claims 3, 5, and 27Arescon does not disclose that each of the data source nodes or data sources are assigned at least two respective network addresses under the open network protocol. Johnson teaches a network setup for monitoring seismic events, and teaches that the source nodes and data collection system are assigned at least two respective network addresses under open network protocol (Pages 1-2). It would have been obvious to modify Arescon to include two respective network addresses for the components of the system as taught by Johnson

in order to have a network that can operate in different modes and to simplify the physical cables needed between devices.

Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arescon in view of Szyszko and Fukui as applied to claims 1-5 and 10-13 above, and further in view of Read (4885724).

With regard to claims 7-8, Arescon does not disclose that the seismic data sources include at seismic sources that are vibrators. Read teaches that seismic sources that are vibrators are known sources used in seismic surveys (abstract; Columns 2-3) (Fig. 1b). It would have been obvious to modify Arescon to include vibrators as seismic sources in order to have sources for seismic prospecting that are economical and that can be programmed to generate desired source waveforms.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arescon in view of Johnson (Eos. Trans. AGU Fall Meeting, 2001).

With regard to claims 26-27, Arescon discloses a seismic acquisition system (Geological Survey of Canada) (Pages 5-7), comprising: a plurality of seismic data sources for generating seismic data (seismometers); at least one data collection system (storage, data servers) (Pages 5-10) (Figs. 1, 3); and a line network connecting the seismic data sources to the data collection system using an open network protocol (Internet Protocols) (Figs. 1, 3) (Page 5, Section 3 to Page 9), the line network comprising: a plurality of data source nodes at which a portion of the plurality of seismic

data sources (seismometers, accelerometers) is attached to the line network (Figs. 1, 3) (Page 5, Section 3 to Page 9); and a router for routing data generated by the seismic data sources to the data collection system through the data source nodes in accordance with the open network protocol (Fig. 1) (Pages 7-9). Arescon does not disclose that the seismic data sources, data collection system, data source nodes, and routers are assigned at least two network addresses. Johnson teaches that it is known in seismic networks using IP addresses for the routers and equipment to allow several IP addresses to be assigned to a single router or other component of the system (multi-netted system) (Pages 1-2). It would have been obvious to modify Arescon to include assigning at least two network addresses to the components of the seismic acquisition system that uses the open protocol as taught by Johnson in order to simplify physical cables between devices and to allow for data transfer to continue in the event of system outages or failures in certain parts of the system.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SCOTT A. HUGHES whose telephone number is (571)272-6983. The examiner can normally be reached on M-F 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. A. H./

Examiner, Art Unit 3663

/Jack W. Keith/
Supervisory Patent Examiner, Art Unit 3663